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TO	U.S. Patent Office
CC	RON@GHZDATA.COM
FROM	RONALD B. MILLER
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SUBJECT	PAT App 10-601464

ATTN: ART UNIT 2841  
Ishwar Patel

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Monday, Dec 26, 2005

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Attn: Ishwar Patel, Examiner  
Art Unit 2841  
RE: 10/601/464

Dear Mr Patel,

It is obvious that you are confused about the intent and the substance of the patent application I have files.

#### GENERAL DISCUSSION AND OVERVIEW OF THIS PATENT

This does not reflect on your technical competence but rather on the nature of the patent and the depth of the substance. In the broadest but simplest sense:

- printed circuit boards are used to connect electronic components
- all electrical connections are transmission lines
- printed circuit boards use dielectric materials
  - for mechanical support
  - and for insulation of the electrical connections

These dielectric materials have electrical properties which limit high-frequency high-data rate performance:

- Dielectric constant( $\epsilon_r$ ) – 3 to 4 limits speed of travel to  $V_s/\sqrt{\epsilon_r} \sim 1/2$ 
  - $V_s$  = Velocity of free space 300 Million Meters/Second
- Dielectric loss tangent( $\tan \delta$ ) attenuates high frequency signals.
- Both  $\epsilon_r$  and  $\tan \delta$  are frequency causing dispersion of the waveform
- Dispersion of the waveform causes slow rise-time and fall-time
- Slow rise-time And slow fall-time at high data rates into the Gigabit per

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